

SALIX GLAUCA L. AND ITS ALLIES IN THE ATHABASCA-GREAT SLAVE LAKE REGION¹

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(Plate 218)

THE writer has collected eighty-nine sheets of *Salix glauca* or its close relatives, in good fruiting condition, in the Athabasca-Great Slave Lake region during the past five summers. The greater part of these fall rather definitely into one group, and appear to be inseparable from the European specimens of *S. glauca* in the Gray Herbarium.

There have been varying opinions as to the presence of typical *Salix glauca* in America. Rydberg² regarded it as rare and "probably confined to the extreme northeast" (he also cites a specimen from Alaska). Coville³ states that he was unable to separate Alaskan specimens from some of the European material. Schneider,⁴ in monographing the group, reviewed the situation and said, "I agree with Coville that the North American forms are very similar to those of *S. glauca*, but they are in my opinion not fully identical with the typical *S. glauca* L. s. str."; and in another place, "In looking over the copious and well collected American specimens before me, I hesitate to designate them as typical *S. glauca*, nor am I willing to regard them as a separate species until a closer study of the circumpolar willow has convinced me of one fact or the other." He states that the American material seems to differ from the typical *S. glauca* "by the usually well developed stipules, by the longer pedicels of the fruits which normally are from one-half to twice longer than the gland, and by the tendency of the filaments to become almost glabrous."

The writer's material shows none of these differences. Stipules are present only in a few cases, though the specimens were collected both early and late in the season. The pedicels of the capsules are variable in length from a very nearly sessile condition to 1.5 mm., being sometimes twice as long as the gland, but more often shorter. These conditions vary greatly in the same ament. It is of note that the pedicels

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² Rydberg, P. A. Bull. N. Y. Bot. Gard. i. 271 (1899).

³ Coville, F. V. Proc. Wash. Acad. Sci. iii. 321 (1901).

⁴ Schneider, C. Bot. Gaz. lxvi. 326 (1918).

and glands of the European material in the Gray Herbarium show the same wide variation. In forming a description of typical *S. glauca*, following Linnaeus¹ and Enander,² Schneider makes the capsules sessile³ but adds part of a description of Lapland material by Andersson,⁴ who states that the capsules have very short pedicels. The evident variability of this character both in European and American material makes it of little value in an attempt to separate the two. The same is true of the amount of hair on the filaments, the material at hand matching most of the European in having a small amount at the bases of these. Floderus⁵ states that the style in *S. glauca* is cleft to the base, and uses this character to separate it from other related species, but European specimens in the Gray Herbarium show styles quite variously cleft, as do also the American. There is a slight tendency toward greater division of the style in the European, but not enough to merit a separation. The leaves vary greatly on different plants and on the same plant, both as to shape and pubescence, but the same variations are to be found in the European specimens. Other characters used by Floderus, such as the color of the bracts and the lobing of the nectaries, also fail to merit a division.

The larger part of the writer's collection closely resembles many of the specimens labeled *S. glauca* var. *glabrescens* Schneider, but it seems unnecessary to give them varietal rank in view of the above. Another group of specimens appears to answer the description of *S. glauca* var. *acutifolia* of Schneider and to match specimens so labeled by him. This variety seems to be a consistent one, with smaller, more narrowly lanceolate or elliptic, thinly hairy leaves with slightly and irregularly denticulate margins. Schneider has assigned the Alaskan material to this variety. The remaining sheets show notable variations from the above. Several of them match precisely a specimen of *S. desertorum* Richardson in the Gray Herbarium. This specimen was collected by Richardson at Fort Franklin, and is evidently a part of the original material. Between these plants and *S. glauca* there is a series of intermediate transition forms, some of them appearing on the same plant (Plate 218). In Andersson's first treatment of *S. desertorum*⁶ he considered it as a sub-species of *S. glauca*, stating that it

¹ Linnaeus, C. Fl. Lapp. 290 (1737).

² Enander, S. J. Stud. Salic. Linnés Herb. 51, 54, 59 (1917).

³ Schneider, C. Ibid. 320.

⁴ Andersson, N. J. Salic. Lap. 73, fig. 21 (1845).

⁵ Floderus, B. in C. A. M. Lindman's *Svensk Fanerogamflora* 186-187. Stockholm (1918).

⁶ Andersson, N. J. Öfv. K. Vet. Akad. Förh. 127 (1858).

was a well defined form and that transition forms between it and true *S. glauca* were occasionally seen. Later¹ he mentioned it as a species, but named as varieties of it certain forms which have been shown to be *S. brachycarpa* by Schneider.² When making it a sub-species of *S. glauca* Andersson also described it as an extreme arctic modification of this species.

In the semi-open prairies about 20 miles west of the upper Slave River, and again on the eastern slopes of the Caribou Mountains about 70 miles west of the prairies, were found shrubby willows with small, reticulate-veined leaves and short aments. These were found to match very closely specimens called *S. chlorolepis* Fernald var. *antimima* by Schneider,³ and to resemble closely certain specimens from Fort Churchill, Hudson Bay, and from Mt. Albert, on the Gaspé Peninsula, labeled *S. brachycarpa* Nutt. by him. Study of authentic specimens of *S. chlorolepis* Fernald⁴ and of *S. brachycarpa* Nutt.⁵ indicate that the above material from Gaspé and Hudson Bay, as well as that collected by the writer, is much much more closely allied to the latter species. *S. chlorolepis* is well defined by its large, green bracts and by its entirely glabrous capsules, while the specimens in question differ from *S. brachycarpa* chiefly in their less pubescent leaves and twigs. *S. brachycarpa* is a hoary plant occurring in the Gaspé region and in the central Rocky Mountains, and is consistent through many collections. The less pubescent form has long been noted in the east as being quite distinct and also consistent. With the addition of the Churchill specimens and the writer's it appears to be a good geographic variety, forming a sub-arctic representative of the species, and the following new combination is therefore proposed:

SALIX BRACHYCARPA Nutt., var. **antimima** (Schneider), n. comb.
S. chlorolepis, var. *antimima* Schneider, Bot. Gaz. lxvi. 339 (1918).

Within the region from which the collections have been made, the above groups are rather clearly segregated. Typical *S. glauca*, of wide range in Europe and North America, is confined to rich woods or the muskeg borders of lakes and streams. Most of the specimens are from the gently rolling upland west of the upper Slave River.

¹ Andersson, N. J. DC. Prod. xvi². 281 (1868).

² Schneider, C. Ibid. 332.

³ See Schneider, C. Ibid. 339.

⁴ See Fernald, M. L. RHODORA vii: 185-186 (1905).

⁵ See Nuttall, T. N. Am. Sylva i: 69 (1843).

Var. *acutifolia*, a well marked form with a wide-ranging consistency in Alaska and the northern Cordilleran region, is confined to the rocky uplands of the pre-Cambrian country east of the Slave River district. It has a range somewhat similar to that of another willow common in Alaska and entering the Great Slave Lake basin, *S. alaxensis*. Although the *acutifolia* group is confined to the semi-barren rocky country, typical *S. glauca* grows in the least exposed and richest woods at the eastern end of Great Slave Lake. *S. desertorum* was collected on the bleak, exposed, rocky shores on the north side of McLeod Bay, Great Slave Lake, while the forms approaching *S. brachycarpa* were seen only in the semi-open prairies and on the upper slopes of the Caribou Mountains west of the Slave River. *S. desertorum*, however, may prove to be nothing more than an occasional dwarfed form of the woodland *S. glauca*. Its rarity is attested by its sporadic occurrence in herbaria, although the regions in which it grows have yielded several other species of willows. It should also be noted that it has never been found in the extreme arctic regions, but only in districts near or in contact with wooded areas where *S. glauca* occurs.

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HITCHCOCK'S "FIELD WORK FOR THE LOCAL BOTANIST."¹—Anyone with a sufficiently strong bent for local botanical investigation will achieve results of value, however isolated or otherwise at a disadvantage he may be—witness, for instance, Howell of Oregon, Frost of Vermont and Brendel of the "Flora Peoriana." The opportunity to make observations which will really add to the sum of knowledge is open to all who possess an active interest in field botany and fairly ready access to wild places. Many, however, miss it because of ignorance of methods or a fallacious impression that there is no longer anything to be found out except, perhaps, in the remote portions of the earth.

For such persons Dr. Hitchcock endeavors, in the pamphlet at hand, to provide encouragement, guidance and information. He has chapters, brief and simply put, on such subjects as woody plants in their winter condition, fruits and seeds and the dissemination of the latter, seedlings,

¹HITCHCOCK, A. S. *Field Work for the Local Botanist*. Published by the author, 1867 Park Road, Washington, D. C. 58 pp. \$1.10.